values obtaining from long time research problems because of the pressure for quick, so-called practical results. If a shift is made and is carried too far, great losses are certain to occur and all should plan to carry on or to resume their activities in fundamental research just as soon as humanly possible.

OBITUARY

HARRIS HANCOCK

ON March 16, 1944, Harris Hancock, professor emeritus of mathematics of the University of Cincinnati, died at his home in Charlottesville, Va. A scant dozen miles away is Ellerslie, the ancestral Hancock home; here he was born seventy-seven years ago, the son of Richard Johnston Hancock and Thomasia Harris Hancock. After attending the University of Virginia and the Johns Hopkins University, where he received his A.B. in 1891, he went abroad to study with eminent British, German and French mathematicians. At Cambridge he studied with Cayley, Forsyth, Glaisher and J. J. Thomson. In Germany, at the University of Berlin, he attended the lectures of Fuchs, Frobenius, Kronecker and Schwartz. Here he was profoundly influenced by the lectures of Schwartz on the theories of his great teacher, Carl Weierstrass, one of the most subtle and penetrating critics of mathematical rigor and logic. After receiving the doctorate in philosophy from Berlin in 1894, he proceeded to Paris, where at the Sorbonne, he studied under Darboux, Picard and Poincaré, a triumvirate whose writings and researches form a rich legacy for geometry and analysis. At Paris he was awarded the degree of doctor of science.

Returning to the United States, he taught at the University of Chicago for six years. In 1900 he came to the University of Cincinnati as the head of the department of mathematics. Here he began work on a series of books over the fields of mathematics to which he had given his principal attention, while in Europe. His first two volumes, on "Maxima and Minima" and "The Calculus of Variations," were founded on the lectures of Weierstrass and helped to familiarize American mathematicians with the work of this great savant. Both volumes were published by the University of Cincinnati Press; the first indeed was edited by President Howard Ayres, who was presumably a confirmed Weierstrassian. These were followed by his books on "Elliptic Functions" and "Elliptic Integrals," both published by the house of Wiley. The work on "Elliptic Functions" was planned on a heroic scale as a three-volume treatise. Only the first volume, on "Analysis," of some five hundred pages, was published in full. The second, which was originally designed to cover the entire gamut of applications, was finally scaled down to form a monograph on "Elliptic Integrals." The third volume, on "General Arithmetic and Higher Algebra," was never published in its original form. But parts of this volume were presumably incorporated into the next of Dr. Hancock's books, a two-volume treatise, of some 1,250 pages, on the "Foundation of the Theory of Algebraic Numbers." This work was published by Macmillan with the aid of the Charles Phelps Taft Memorial Fund. As a sequel to this work, he finally brought out in 1939, two years after his retirement, his "Developments of the Minkowski Geometry of Numbers," also published by Macmillan and with the aid of the Taft fund.

These books brought to the American mathematical public the researches of foreign mathematicians in a more digestible form than that offered by the professional periodicals of the time. Hancock had access to Weierstrass' lectures in the Mathematischen Verein in Berlin; and his bringing these lectures to America, first in a series of abstracts in the *Annals of Mathematics,* and later in his books, he performed a great service for American mathematics. He had, too, the gift of clear exposition; he was never hurried, either in his writing or his lectures. At his own good time, the argument marched on to an inevitable and satisfactory conclusion.

It must surely be a matter of amazement that Harris Hancock, so unhurried, so deliberate, could have accomplished such a vast amount of important work in his lifetime. Apparently he was never very busy. Indeed he was always ready to give friendly advice and assistance to his students, to tell a good darky story, to discuss the culture of roses or the breeding of fine horses. In his classroom he adopted the principle stated so well by Nevin Fenneman: "Primary education should develop your weak points; university education your strong." The stupid, the slothful, the indifferent, he left to sleep in peace. But if you showed a spark of interest in mathematics, a gleam of ability, you were a marked man thereafter. He worked the able student constantly and unmercifully until he was finally delivering complete lectures.

Dr. Hancock's good students loved him; and even the poor and indifferent respected his ability and ease in the realm of mathematics. To many of his students, especially the engineers, he was known as the "Handy Man"; whenever a problem arrived at some seeming impasse, he had always a handy transformation that would save the day. They were baffled and amused by his southern pronunciation; and they all looked forward to Derby Day as a national holiday

from the Calculus—for then the "Handy Man" betook himself to Churchhill Downs.

Harris Hancock was by no means exclusively concerned with advanced mathematics. He was vitally interested for many years in mathematics at the high-school level. He wished to maintain good standards of elementary instruction. He insisted that teachers of mathematics must first learn the subject—not only methods of teaching mathematics, but also its rich and diverse content. In a series of articles in *School and Society* from 1915 to 1920 he set forth his views in no uncertain terms. More important still, he built up through his courses for teachers a devoted group of men and women who gave their pupils in the high schools a firm foundation for more advanced work.

As Mrs. Hancock wrote a few days ago: "He had lived a full and happy life; and had accomplished a great amount of work which will live. We have so much to comfort us, but the parting is hard." It is hard for us too; we shall miss the big, kindly man in a derby hat for so long a familiar figure on the campus.

And now the layman, to whom mathematics is a drear and arid subject, may well wonder: "Why did this man, so human, so kind, so capable of piloting his life into this or that channel, why did he choose to spend his energies, his very life-blood, in writing in the most abstruse of fields for a mere handful of readers?" Perhaps the answer is given by the English physical chemist, F. G. Donnan: "The power of rigorous deductive logic in the hands of a mathematician of insight and imagination has always been one of the greatest aids in man's effort to understand that mysterious universe in which he lives. Without the presence of this power, the experimental discoverer might wander in the fields and pick the wild flowers of knowledge, but there would be no beautiful garden of understanding wherein the mind of man can find a serene delight."

LOUIS BRAND

UNIVERSITY OF CINCINNATI

CHANCEY JUDAY

ON March 29, 1944, science lost its foremost limnologist. Dr. Juday contributed, individually or as a joint author, almost a hundred limnological papers of outstanding merit. Many young limnologists were trained and stimulated by him. He served for two years as the first president of the Limnological Society of America. In 1943 the Academy of Sciences of Philadelphia awarded him their Leidy Medal. Dr. Juday was president of the American Microscopical Society (1923) and of the Ecological Society of America (1927). He was also secretary of the Wisconsin Academy of Sciences (1922–1930) and then president, a member of the American Association for the Advancement of Science, American Society of Naturalists, American Society of Zoologists, International Limnologists, Phi Beta Kappa and Sigma Xi.

Dr. Juday was born on a farm near Millersburg, Indiana, on May 5, 1871, and was therefore seventy-two years old at the time of his death. He attended the University of Indiana and received his A.B. (1896), A.M. (1897) and LL.D. (1933) degrees from that institution. Then he taught in an Indiana high school for two years (1898–1900), served as biologist for the Wisconsin Natural History Survey for a year (1903–04), was acting professor of biology in the University of Colorado (1903–04), and instructor in zoology in the University of California (1904–05). In 1905 he returned to Wisconsin and was a member of the Natural History Survey until 1941, when he retired. He was made a lecturer in the University of Wisconsin in 1908, professor of limnology in 1931 and director of the Trout Lake Limnological Laboratory in 1925.

Dr. Juday published papers on the lakes of Indiana, Colorado, California, Central America, New York and other localities. Among his eminent contributions are those to the understanding of plankton migrations, the significance of dissolved gases in lakes, chemistry of lake waters, growth of lake animals, lake populations and the productivity of lakes. Dr. Juday was an example to all who knew him of a high-class gentleman —thoughtful, competent, helpful, industrious, modest and responsible. Though in early life he was obliged on two occasions to rest for a time in a tuberculosis sanitarium, he kept on with his limnological work without asking favors or special consideration from his fellows. He was a brave lad!

Dr. Juday is survived by his good wife, Magdalen Evans; two sons, Major C. E. and Dr. R. E.; a daughter, Mary; a sister, Mrs. Ada Wehrley; and two grandchildren.

A. S. PEARSE

DEATHS AND MEMORIALS

DR. HARRY FIELDING REID, professor emeritus of dynamic geology and geography of the Johns Hopkins University, died on June 18. He was seventy-five years old.

DR. HERBERT A. CLARK, founder and head of the standards laboratory of the Taylor Instrument Companies, Rochester, N. Y., died on April 20.

DR. MORTON C. MOTT-SMITH, staff writer for physics and chemistry of Science Service, Washington, D. C., died on June 9 at the age of sixty-six years.

Nature writes: "Past and present students of the department of zoology of University College, Cardiff,